

Name: Key  
Period: \_\_\_\_\_ Table: \_\_\_\_\_

### **Section A - Basics**

Choose the best answer from the list and write the corresponding letter in the space provided.

- B 1. A physical property may be investigated by:  
A) allowing iron to rust                      C) letting milk turn sour  
B) melting ice                                  D) burning wood
- D 2. An example of a physical property is:  
A) Toxicity                                      C) Reactivity  
B) Flammability                              D) Volume
- B 3. A chemical change has taken place if:  
A) matter changes from a solid to a liquid  
B) light is produced  
C) heat is absorbed  
D) a substance is dissolved
- A 4. An example of a chemical property is:  
A) Reactivity      B) Temperature      C) Density              D) Concentration
- A 5. Which of the following BEST describes an **element**?  
A) The smallest unit of an object that maintains the chemical identity of the object.  
B) A substance that cannot be separated or broken down into simpler substances by chemical means.  
C) A substance made from two or more different objects.  
D) A collection of atoms bonded together that behave as a unit.
- C 6. Which of the following BEST describes a **molecule**?  
A) A collection of matter.  
B) The smallest unit of an element that maintains the chemical identity of the element.  
C) A collection of atoms bonded together that behave as a unit.  
D) A collection of mixtures that behave as a unit.
- A 7. Which of the following BEST describes a **mixture**?  
A) A collection of two or more substances, each of which retains its own identity and property.  
B) The smallest unit of an element that maintains the chemical identity of the element.  
C) A collection of atoms bonded together that behave as a unit.  
D) A collection of mixtures that behave as a unit.
- C 8. The state of matter for an object that has a definite volume but **not** a definite shape is  
A) gas                      B) solid                      C) liquid                      D) plasma
- B 9. A(n) \_\_\_\_\_ change involves a change in the fundamental components of the substance.  
A) Obama                      B) chemical                      C) physical                      D) color

## Section B - State

Choose the best answer from the Word Bank and write the corresponding letter in the space provided.

- |                 |                |
|-----------------|----------------|
| A) Condensation | D) Freezing    |
| B) Deposition   | E) Melting     |
| C) Evaporation  | F) Sublimation |

B 10.

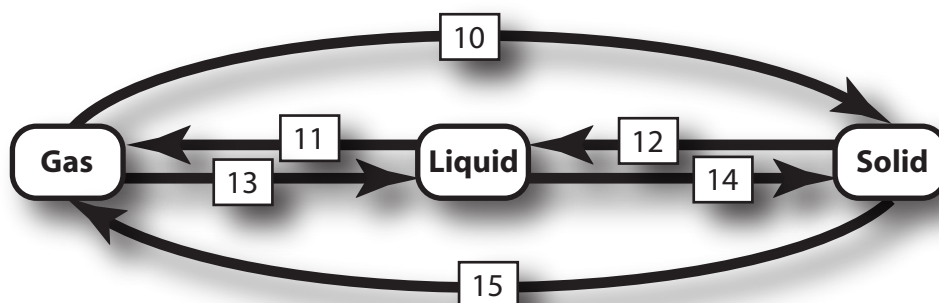
C 11.

E 12.

A 13.

D 14.

F 15.



## Section C - Change

Choose whether the change described is a Physical (P) or Chemical (C) Change:

C 16. Baking Bread

C 17. Rust Forming on a Car

P 18. Burning music on a CD

C 19. Lighting a Match

## Section D - Mixtures

Choose whether the mixture pictured is a Homogeneous (1) or Heterogeneous (2) Mixture:

1 20.



20. Milk

2 21.



21. Quarter

2 22.



22. Fruit Salad

1 23.



23. Gold Ring

2 24.



24. Smoke

## Section E - Elements

A 25. Which Element could be used as a disinfectant?

- |      |      |       |       |                      |
|------|------|-------|-------|----------------------|
| A) F | B) H | C) He | D) Pb | E) None of the above |
|------|------|-------|-------|----------------------|

A 26. Which Element would react vigorously with water?

- |      |      |       |       |                      |
|------|------|-------|-------|----------------------|
| A) K | B) H | C) He | D) Ag | E) None of the above |
|------|------|-------|-------|----------------------|

C 27. Which Element is in the Oxygen Family?

- |       |      |       |       |                      |
|-------|------|-------|-------|----------------------|
| A) Br | B) H | C) Se | D) Pb | E) None of the above |
|-------|------|-------|-------|----------------------|

- B** 28. Which Element is in the Alkali Metal Family?  
 A) Be B) H C) O D) Pb E) None of the above
- B** 29. Which Element is a Noble Gas?  
 A) H B) He C) N D) C E) None of the above
- C** 30. Which Element is a semi-conductor?  
 A) Ba B) Hg C) Si D) Pb E) None of the above
- B** 31. A Cation will { **A) gain B) lose** } an electron.

**Section F - Element Symbols** - Choose the best answer to the question.

- C** 32. Which is the most correct Lewis Diagram for Phosphorous?  
 A)  $\text{:}\ddot{\text{P}}\text{:}$  B)  $\cdot\ddot{\text{P}}\cdot$  C)  $\cdot\ddot{\text{P}}\text{:}$  D)  $\cdot\ddot{\text{P}}\cdot$  E) None of the above
- D** 33. Which is the most correct Lewis Diagram for Carbon?  
 A)  $\text{:}\ddot{\text{C}}\text{:}$  B)  $\ddot{\text{C}}$  C)  $\ddot{\text{C}}\text{:}$  D)  $\cdot\ddot{\text{C}}\cdot$  E) None of the above
- B** 34. What do the dots in the Lewis Diagram represent?  
 A) The total number of electrons of an element  
 B) The number of valence electrons of an element  
 C) The number of protons of an element  
 D) The number of neutrons of an element  
 E) None of the above
- B** 35. Using the Nuclide Symbol  $^{32}_{16}\text{S}^{-2}$ , how many **protons** does sulfur have?  
 A) 14 B) 16 C) 18 D) 32 E) None of the above
- B** 36. Using the Nuclide Symbol  $^{32}_{16}\text{S}^{-2}$ , how many **neutrons** does sulfur have?  
 A) 14 B) 16 C) 18 D) 32 E) None of the above
- C** 37. Using the Nuclide Symbol  $^{32}_{16}\text{S}^{-2}$ , how many **electrons** does sulfur have?  
 A) 14 B) 16 C) 18 D) 32 E) None of the above
- C** 38. Which Element would **NOT** be good for currency?  
 A) Na B) Zn C) Cu D) Ni E) None of the above

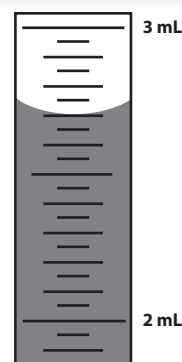
**Section G - Ion Matching** - Match the element with its ionic charge  
 (Some may be used more than once and some not at all)

- C** 39. Phosphorous A) -1
- D** 40. Potassium B) -2
- D** 41. Sodium C) -3
- B** 42. Sulfur D) +1
- A** 43. Iodine E) +2

**Section H - Measurement & Conversions** - Choose the best answer to the question.

- C** 44. How many **milliliters (mL)** is a 24 fl-oz bottle of Aquafina Water?  
A) 0.81 mL      B) 810 mL      C) 710 mL      D) 7.10 mL
- A** 45. How many **kilograms (kg)** is a half-pound hamburger?  
A) 0.227 kg      B) 22.7 kg      C) 1.10 kg      D) 100.1 kg
- B** 46. How many **Liters (L)** of gasoline will fill a 5-gallon container?  
A) 0.189 L      B) 18.93 L      C) 1.32 L      D) 132.0 L
- A** 47. What is the **density** of a silver dollar if its volume is 2.55 cm<sup>3</sup> and its mass is 26.73 g?  
A) 10.48 g/cm<sup>3</sup>      C) 28.46 g/cm<sup>3</sup>  
B) 68.16 g/cm<sup>3</sup>      D) 0.095 g/cm<sup>3</sup>
- A** 48. What is the **Volume in the graduated cylinder in Figure H**  
A) 2.70 mL      C) 2.80 mL  
B) 2.75 mL      D) 2.85 mL

Equation  
density = mass / Volume



**Figure H**  
**Graduated Cylinder**

**Section I - Energy & Heat** - Choose the best answer to the question.

- D** 49. Kinetic Energy is:  
A) conserved energy      C) stored energy  
B) unpredictable energy      D) motion energy
- C** 50. Potential Energy is:  
A) conserved energy      C) stored energy  
B) unpredictable energy      D) motion energy
- A** 51. Which is the best material to conduct heat?  
A) Steel Wool      C) Air  
B) Cotton
- D** 52. The light energy emitted from the sun is produced by:  
A) the nuclear fraction process      C) the nuclear friction process  
B) the nuclear fission process      D) the nuclear fusion process
- A** 53. What is the key feature of a substance that effects its Chemical Potential Energy?  
A) Volume of the object      C) Height of the object  
B) Color of the object      D) Velocity of the object
- C** 54. What is the key feature of an objects that effects its Gravitational Potential Energy?  
A) Volume of the object      C) Height of the object  
B) Color of the object      D) Velocity of the object
- B** 55. Heat flows:  
A) from cold to hot      C) equally from hot and cold  
B) from hot to cold      D) none of the above
- A** 56. Energy can be neither created nor destroyed, but it can be converted from one form to another.  
A) True      B) False

**Section J - Electromagnetic Waves** - Choose the best answer to the question.

- A** 57. Which type of Electromagnetic Wave has the longest wavelength ( $\lambda$ )?  
A) Radio C) Ultraviolet  
B) Microwaves D) Gamma
- D** 58. Which type of Electromagnetic Wave has the highest energy?  
A) Radio C) Ultraviolet  
B) Microwaves D) Gamma
- B** 59. Visible light makes-up a large portion of the Electromagnetic Spectrum.  
A) True B) False

**Section K - Atomic Theory** - Choose the best answer to the question.

- A** 60. When an atom absorbs energy its electrons will:  
A) jump to a higher energy level C) stay in their own energy level  
B) jump to a lower energy level D) do nothing
- C** 61. The colors emitted from an atom are the result of:  
A) electrons jumping to higher energy levels  
B) protons jumping to higher energy levels  
C) electrons jumping to lower energy levels  
D) protons jumping to lower energy levels
- C** 62. The most current Atomic Model (spdf Model) differs from the Bohr Model in the following way:  
A) electrons stay in a predictable orbits C) electrons flow randomly within their orbital shape  
B) energy levels support less electrons D) electrons can not jump to higher energy levels
- B** 63. The electron configuration for Boron (B) is:  
A)  $1s^2 2s^2 3s^1$  B)  $1s^2 2s^2 2p^1$  C)  $1s^2 2s^2 2p^2$  D)  $1s^2 2s^3$
- C** 64. The electron configuration for Sodium (Na) is:  
A)  $1s^2 2s^2 2p^6$  B)  $1s^2 2s^2 2p^7$  C)  $1s^2 2s^2 2p^6 3s^1$  D)  $1s^2 2s^2 2p^6 3s^2$
- D** 65. The dots in the Lewis Dot Diagrams represent:  
A) the number of protons C) the number of electrons  
B) the number of neutrons D) the number of valence electrons

**Section L - Periodic Table Trends** - Choose the best answer to the question.

- B** 66. In the Periodic Table, the **Atomic Number** of the elements:  
A) increase as you go across the period and go up the group  
B) increase as you go across the period and go down the group  
C) decrease as you go across the period and go down the group  
D) decrease as you go across the period and go up the group

**A**

67. In the Periodic Table, the **Electronegativity** of the elements:
- A) increase as you go across the period and go up the group
  - B) increase as you go across the period and go down the group
  - C) decrease as you go across the period and go down the group
  - D) decrease as you go across the period and go up the group

**D**

68. Cations can be found:
- A) only in the s block
  - B) only in the s and p blocks
  - C) only in the s, p & d blocks
  - D) In the whole periodic table

**B**

69. Anions can be found:
- A) only in the s block
  - B) only in the p block
  - C) only in the s, p & d blocks
  - D) In the whole periodic table

**D**

70. The Atomic Mass is:
- A) the mass of all of the protons in the atom
  - B) the mass of all of the neutrons in the atom
  - C) the mass of all of the electrons in the atom
  - D) the mass of all of the protons and neutrons in the atom

**Section M - Chemical Bonding** - Choose the best answer to the question.

**A**

71. Ionic Bonds mostly occur:
- A) between metals and non-metals
  - B) between non-metals
  - C) between metals
  - D) between transition metals

**B**

72. Elements with Covalent Bonds:
- A) transfer all of their electrons
  - B) share their spare electrons
  - C) share all of their electrons
  - D) share their valence electrons

**A**

73. Non-polar Covalent Bonds:
- A) have equal sharing of electrons
  - B) have equal transfer of electrons
  - C) have unequal sharing of electrons
  - D) have unequal transfer of electrons

**Section N - Chemical Bonding Matching** - Match the compound with the type of bond.

Note: The types of bonds may be used more than once or not at all.

- A) Non-Polar Covalent Bond
- B) Polar Covalent Bond

C) Ionic Bond

**C**

74. NaCl

**B**

75. H<sub>2</sub>O

**A**

76. CH<sub>4</sub>

**B**

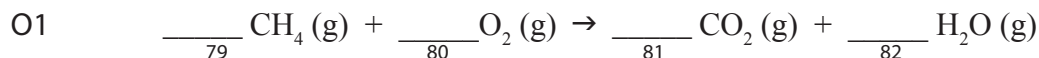
77. AlBr<sub>3</sub>

**C**

78. CsI

**Section O - Chemical Reactions** - Write in the coefficients to balance the following equations. Write 1 for the coefficients that do not change. Also use the following list to identify which type of reaction has occurred.

A) Synthesis      B) Combustion      C) Decomposition  
D) Single Replacement      E) Double Replacement



1

79. CH<sub>4</sub>

2

80. O<sub>2</sub>

1

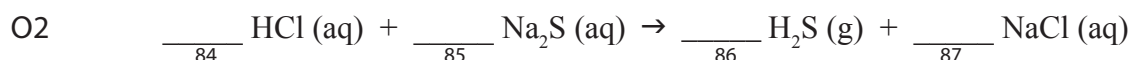
81. CO<sub>2</sub>

2

82. H<sub>2</sub>O

B

83. Type of reaction for equation O1



2

84. HCl

1

85. Na<sub>2</sub>S

1

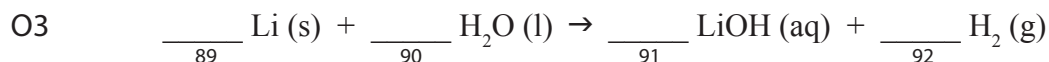
86. H<sub>2</sub>S

2

87. NaCl

E

88. Type of reaction for equation O2



2

89. Li

2

90. H<sub>2</sub>O

2

91. LiOH

1

92. H<sub>2</sub>

D

93. Type of reaction for equation O3